

1. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 - 5x^2 - 21x - 10}{12x^2 + 17x + 6}$$

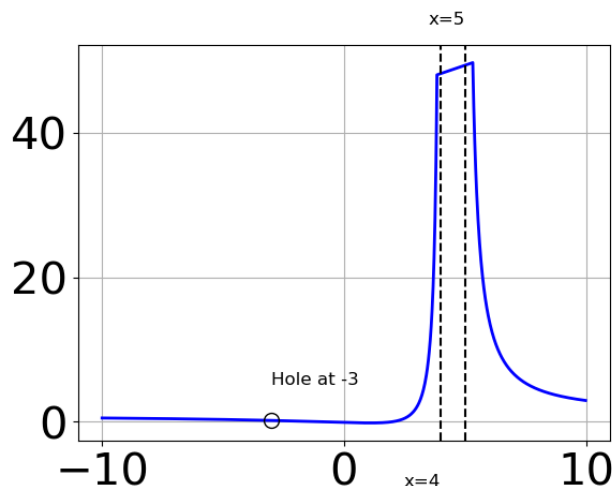
- A. Vertical Asymptotes of $x = -0.75$ and $x = -0.667$ with no holes.
 - B. Vertical Asymptotes of $x = -0.75$ and $x = 2.5$ with a hole at $x = -0.667$
 - C. Holes at $x = -0.75$ and $x = -0.667$ with no vertical asymptotes.
 - D. Vertical Asymptote of $x = -0.75$ and hole at $x = -0.667$
 - E. Vertical Asymptote of $x = 0.5$ and hole at $x = -0.667$
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2. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{9x^3 - 15x^2 - 74x - 40}{9x^2 - 9x - 10}$$

- A. Holes at $x = 1.667$ and $x = -0.667$ with no vertical asymptotes.
 - B. Vertical Asymptotes of $x = 1.667$ and $x = -1.667$ with a hole at $x = -0.667$
 - C. Vertical Asymptotes of $x = 1.667$ and $x = -0.667$ with no holes.
 - D. Vertical Asymptote of $x = 1.0$ and hole at $x = -0.667$
 - E. Vertical Asymptote of $x = 1.667$ and hole at $x = -0.667$
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3. Which of the following functions *could* be the graph below?



- A. $f(x) = \frac{x^3 - 2.0x^2 - x + 2.0}{x^3 - 6.0x^2 - 7.0x + 60.0}$
- B. $f(x) = \frac{x^3 + 2.0x^2 - 5.0x - 6.0}{x^3 - 6.0x^2 - 7.0x + 60.0}$
- C. $f(x) = \frac{x^3 - 2.0x^2 - 5.0x + 6.0}{x^3 + 6.0x^2 - 7.0x - 60.0}$
- D. $f(x) = \frac{x^3 - 4.0x^2 - 7.0x + 10.0}{x^3 + 6.0x^2 - 7.0x - 60.0}$
- E. None of the above are possible equations for the graph.

4. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{12x^3 - 5x^2 - 43x + 30}{3x^2 - 20x + 25}$$

- A. Horizontal Asymptote of $y = 4.0$
- B. Horizontal Asymptote of $y = 5.0$ and Oblique Asymptote of $y = 4x + 25$
- C. Horizontal Asymptote at $y = 5.0$
- D. Oblique Asymptote of $y = 4x + 25$.
- E. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 4x + 25$

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5. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{12x^3 - 35x^2 + 33x - 10}{4x^2 + 7x - 15}$$

- A. Horizontal Asymptote of $y = -3.0$ and Oblique Asymptote of $y = 3x - 14$
 - B. Horizontal Asymptote at $y = -3.0$
 - C. Oblique Asymptote of $y = 3x - 14$.
 - D. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x - 14$
 - E. Horizontal Asymptote of $y = 3.0$
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6. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{30x^3 - 47x^2 - 114x - 45}{10x^3 + 22x^2 - 42x - 18}$$

- A. Horizontal Asymptote of $y = 3.000$
 - B. Horizontal Asymptote of $y = 0$
 - C. Vertical Asymptote of $y = 3$
 - D. Vertical Asymptote of $y = -1.000$
 - E. None of the above
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7. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 - 7x^2 - 7x + 6}{6x^2 + 5x - 6}$$

- A. Holes at $x = -1.5$ and $x = 0.667$ with no vertical asymptotes.
- B. Vertical Asymptotes of $x = -1.5$ and $x = 0.667$ with no holes.

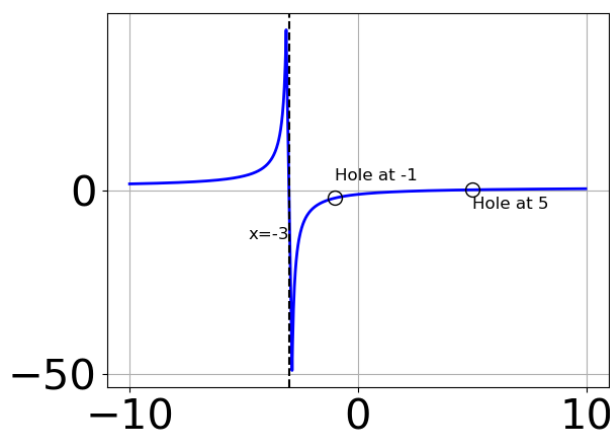
- C. Vertical Asymptote of $x = 1.0$ and hole at $x = 0.667$
 D. Vertical Asymptote of $x = -1.5$ and hole at $x = 0.667$
 E. Vertical Asymptotes of $x = -1.5$ and $x = 1.5$ with a hole at $x = 0.667$

8. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{3x^2 - 17x + 10}{15x^3 - 58x^2 - 16x + 32}$$

- A. Horizontal Asymptote at $y = 5.000$
 B. Horizontal Asymptote of $y = 0$
 C. Horizontal Asymptote of $y = 0.200$ and Oblique Asymptote of $y = 5x + 9$
 D. Oblique Asymptote of $y = 5x + 9$.
 E. Horizontal Asymptote of $y = 0.200$

9. Which of the following functions *could* be the graph below?



- A. $f(x) = \frac{x^3 + 7.0x^2 + 7.0x - 15.0}{x^3 + x^2 - 17.0x + 15.0}$
 B. $f(x) = \frac{x^3 + x^2 - 24.0x + 36.0}{x^3 - 1.0x^2 - 17.0x - 15.0}$

C. $f(x) = \frac{x^3 - 6.0x^2 - 7.0x + 60.0}{x^3 + x^2 - 17.0x + 15.0}$

D. $f(x) = \frac{x^3 - 7.0x^2 + 7.0x + 15.0}{x^3 - 1.0x^2 - 17.0x - 15.0}$

E. None of the above are possible equations for the graph.

10. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 + 13x^2 - 9x - 10}{12x^2 + 23x + 10}$$

- A. Vertical Asymptotes of $x = -1.25$ and $x = -2.5$ with a hole at $x = -0.667$
- B. Vertical Asymptote of $x = 0.5$ and hole at $x = -0.667$
- C. Vertical Asymptotes of $x = -1.25$ and $x = -0.667$ with no holes.
- D. Vertical Asymptote of $x = -1.25$ and hole at $x = -0.667$
- E. Holes at $x = -1.25$ and $x = -0.667$ with no vertical asymptotes.
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